**Listing of Claims**:

1-17. Cancelled.

18. (CURRENTLY AMENDED) A method of identifying a fish with a gene mutation involved in carcinogenesis comprising the steps of:

(a) exposing a fish to a mutagen;

(b) mating said fish from step (a) with a wild-type fish to produce an F1 generation;

(c) exposing ~~the~~ haploid eggs ~~of~~ derived from said F1 generation female fish of step (b) to inactivated fish sperm to create haploid embryos; and

(d) screening said haploid embryos for cell proliferation defects wherein an embryo with cell proliferation defects is determined to harbors a gene mutation involved in cell proliferation;

(e) mating an F1 generation female of step (c) harboring the gene mutation involved in cell proliferation as determined in step (d) with a wild-type fish to produce an F2 generation;

(f) exposing a wild-type fish and a member of the F2 generation to a carcinogen; and

(g) comparing the tumor formation in the wild-type and the member of the F2 generation fish wherein an accelerated tumor formation in the F2 generation fish identifies the fish with the gene mutation ~~in the mutant fish as being~~ that is involved in carcinogenesis.

19. (ORIGINAL) The method of claim 18, wherein the fish is a zebrafish.

20. (ORIGINAL) The method of claim 18, further comprising a step of positional cloning of the gene involved in carcinogenesis.

21. (ORIGINAL) The method of claim 18, wherein the screening is performed using an antibody against a cell cycle component.

22. (ORIGINAL) The method of claim 21, wherein the antibody is specific for a protein selected from the croup consisting of phospho-histone H3, phosphorylated MAP kinase, phosphorylated MEK-1, BM28, cyclin E, p53, Rb and PCNA.

23. (ORIGINAL) The method of claim 18, wherein the screening is performed using nucleic acids recognizing cell cycle components.

24. (ORIGINAL) The method of claim 23, wherein the nucleic acid is PCNA or cyclin b-1.

25. (PREVIOUSLY PRESENTED) The method of claim 18, wherein the screening is performed using flow cytometry wherein DNA in the haploid embryos is stained with a dye and separated according to their DNA content using flow cytometry wherein changes in the DNA content indicate a problem in cell proliferation.

26. (ORIGINAL) The method of claim 18, wherein the screening is performed using apoptosis markers.

27. (ORIGINAL) The method of claim 26, wherein the apoptosis marker is selected from the group consisting of Annexin V, TUNEL Stain, 7-amino-actinomycin D and Caspase substrates.

28. (ORIGINAL) The method of claim 18, wherein the screening is preformed using BrdU staining.

29. (PREVIOUSLY PRESENTED) The method of claim 18, wherein the screening is performed using an irradiation analysis comprising the steps of irradiating the mutated embryos to cause a cell cycle arrest, staining the embryos with a cell proliferation marker and analyzing the amount of the marker post radiation wherein change in the post radiation marker staining compared to an irradiated non-mutant embryos indicates an abnormal cell proliferation in the mutant embryo.